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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,120	07/03/2003	Stephen J. Yoos	55245US010	7174
32692	7590	04/18/2006	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			KOCH, GEORGE R	
PO BOX 33427				
ST. PAUL, MN 55133-3427			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,120

Applicant(s)

YOOS ET AL.

Examiner

George R. Koch III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/3/03; 1/17/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Embury (US Patent 4,082,211) in view of Yasushi (US 4,039,303), Perkins (US 5,192,390) and Oswald (US 4,600,456).

Embury discloses an apparatus for (or capable of) forming a spiral wound endless abrasive article comprising: a hub (centering mandrel, see Figure 32). The rollers 29/33 supported by elements 39 function as hub elements which control and vary the article "diameter". Embury also discloses a web feeder (item 384, see Figure 11); and a web joiner (head guide assembly 16, with pinch roller pair 20) capable of joining abutting edges of the first web by overlap of the second web as the first and second

webs spirally wind about the hub to form a spiral wound article having a circumference greater than the outer surface of the hub (in the instance multiple webs are fed).

Embury does not disclose that the hub is supported in a cantilevered configuration and that the hub has a longitudinal axis and a convex outer surface.

Embury does not suggest that the web feeder is adapted to introduce a first web and a second web onto the hub at an angle relative to the axis of the hub, the first and second webs positioned in an offset and overlapping configuration;

Yasushi discloses that it is known for abrasive media to be made from web feeders introducing multiple webs (see Figure 1). Yasushi utilizes multiple webs in order to avoid the manufacture a tube from a single web wherein the cloth papers do overlap one another and result in limited functionality due to differences in thickness (i.e., at the overlap portions - see background and summary of the invention). Rather, Yasushi overlaps multiple webs into a multiple layer core (see Figure 2) in order to ensure that the thickness is constant for improved product functionality, and avoid regions of increased thickness, since these regions result in poor functionality of the abrasive product. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used multiple web feeders in order to create an abrasive product with substantially constant thickness and improved functionality.

Additionally, Perkins and Oswald demonstrate that it is known to use mandrel systems which are functionally equivalent to hubs with cantilevers. Perkins and Oswald use these system in order to form articles of a infinitely variable range of sizes (Perkins, abstract; Oswald, abstract). Therefore, it would have been obvious to one of ordinary

skill in the art at the time of the invention to have used such mandrels and hubs in order to produce objects and belts of different sizes.

As to claim 2, Yasushi as incorporated discloses that the first web and second web are adhered at the overlap of the first web and the second web.

As to claim 3, Embury discloses the web joiner comprises at least one press roller (Figure 6, item 90) adjustably positioned adjacent the outer surface of the hub, the press roller capable of applying pressure to the first and second webs at the abutting edges of the first web as the first and second webs pass under the press roller (when two webs are used as in Yasushi).

As to claim 4, Embury discloses that the web joiner further comprises a plurality of press rollers (Figures 6, items 90), at least one of which is driven to move the first and second webs under the press rollers.

As to claim 5, Embury discloses that the plurality of press rollers comprises two upper press rollers (items 90) and two lower press rollers (items 92) forming a nip through which the first and second webs pass.

As to claim 6, Embury discloses that the web feeder comprises a guide adjustably positioned (via the elements shown in Figure 11, such as item 210 and 211) adjacent the hub outer surface, the guide capable of being used to receive the first and second webs and position the first and second webs with the abutting edges of the first web beneath the press roller as the first and second webs spirally wind about the hub (when two webs are used as in Yasushi).

As to claim 7, Yasushi as incorporated makes obvious that the web feeder is further adapted to introduce a third web (as shown in Figure 1) on to the hub at the same angle relative to the axis of the hub, the third web positioned in an offset and overlapping configuration relative to the second web.

As to claim 8, Embury plus Yasushi as incorporated the web feeder comprises a plurality of web unwinds and a web steering mechanism for positioning at least one of the first, second and third webs at the desired angle relative to the axis of the hub. Embury suggests steering mechanisms (Figure 11) for one steel web, and Yasushi discloses the benefits of three webs.

As to claim 9, Embury discloses that the steering mechanism comprises an adjustable web steering bar (items shown in Figure 11). As modified by Yasushi, this makes obvious such mechanisms for positioning the first, second and third webs at the desired angle.

As to claim 10, Embury discloses that the steering mechanism (Figure 11) comprises an adjustable web guide that contacts the first web and adjusts the position and angle of the abutting edges of the first web relative to each other. Yasushi also discloses a steering mechanism (see Figures 4-6, items 19, 20, and 21).

As to claim 11, Yasushi as incorporated discloses that the steering mechanism further comprises a sensor (light guides 17 and 18, and actuator 19 - see Figure 4) that senses incorrect positioning of the abutting edges of the first web.

As to claim 12, Yasushi as incorporated discloses the sensor comprises feedback control connected to the web guide for automatic adjustment of web angle and

position (the feedback loop is defined by sensors 17 and 18, actuator 19, rollers 20 and 21, and the position of web 2). See also column 3, line 52 to column 4, line 62).

As to claim 13, Perkins and Oswald as incorporated make obvious that the hub comprises a first hub and wherein the apparatus further comprises a second hub (such as the other roller) adjustably supported in a cantilevered configuration at a distance from the first hub, the webs passing around the second hub while spirally winding about the first hub to produce a spiral wound article having a desired circumference (see abstracts).

As to claim 14, Embury, Yasushi, Perkins, and Oswald all discloses variants of a web driving mechanism that pulls the webs over the hub at the angle relative to the axis of the hub.

As to claim 15, Embury, Yasushi, Perkins, and Oswald all discloses the web driving mechanism comprises a driven roller.

As to claim 16, Perkins and Oswald (see Figures) suggest that the second hub comprises the driven roller.

As to claim 17, Yasushi (items 20, 21) and Embury (Figure 16) suggest that the web driving mechanism comprises driven nip rollers.

As to claim 18, official notice is taken that it is well known and conventional for the web joiner to comprise a heated hub. One in the art would appreciate that the need for heating would depend on the properties of the adhesive material, and would select heating elements as needed for proper adhesive bonding. Therefore, it would have

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been obvious to one of ordinary skill in the art at the time of the invention to utilize such heating elements in order to ensure proper bonding.

As to claim 19, Yasushi as incorporated discloses the first web comprises a coated abrasive, the second web comprises an adhesive material (since it includes paste), and the third web comprises a reinforcing material (i.e., formed of resilient nature - and see columns 2-3 and Figure 2). In any event, the apparatus of Embury as modified by Yasushi, Perkins and Oswald is capable of manufacturing the claimed product and using the claimed layers.

As to claim 20, Yasushi as incorporated discloses that the first web comprises a coated abrasive and the second web comprises a splicing media (via paste - see column 3, lines 9-13).

Information Disclosure Statement

4. The crossed out references on the July 3rd, 2003 IDS are duplicate references to those on the January 17, 2006 IDS. All references submitted have been considered.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-866-377-8642 and

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giving the operator the above TDD number. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



George R. Koch III
Primary Examiner
Art Unit 1734

GRK
4/16/2006